

1 WHAT IS CLAIMED IS:

2 1. A vehicle surroundings monitoring apparatus,
3 comprising:

4 frontal information detecting means for detecting at
5 least solid object information and traveling road information
6 in front of an own vehicle;

7 preceding vehicle trace calculating means for
8 calculating a trace of a preceding vehicle from past data of said
9 preceding vehicle;

10 first own traveling path calculating means for
11 calculating a first traveling path of said own vehicle based on
12 said traveling road information;

13 second own traveling path calculating means for
14 calculating a second traveling path of said own vehicle based
15 on said trace of said preceding vehicle; and

16 final own traveling path calculating means for
17 calculating a final traveling path of said own vehicle based on
18 said first traveling path and said second traveling path;

19

20 2. A vehicle surroundings monitoring apparatus,
21 comprising:

22 frontal information detecting means for detecting at
23 least solid object information and traveling road information
24 in front of an own vehicle;

25 first own traveling path calculating means for

1 calculating a first traveling path of said own vehicle based on
2 said traveling road information;
3 third own traveling path calculating means for
4 calculating a third traveling path of an own vehicle based on
5 traveling conditions of said own vehicle; and
6 final own traveling path calculating means for
7 calculating a final traveling path of said own vehicle based on
8 said first traveling path and said third traveling path;
9
10 3. A vehicle surroundings monitoring apparatus,
11 comprising:
12 frontal information detecting means for detecting at
13 least solid object information and traveling road information
14 in front of an own vehicle;
15 preceding vehicle trace calculating means for
16 calculating a trace of a preceding vehicle from past data of said
17 preceding vehicle;
18 first own traveling path calculating means for
19 calculating a first traveling path of said own vehicle based on
20 said traveling road information;
21 second own traveling path calculating means for
22 calculating a second traveling path of said own vehicle based
23 on said trace of said preceding vehicle;
24 third own traveling path calculating means for
25 calculating a third traveling path of said own vehicle based on

1 traveling conditions of said own vehicle; and
2 final own traveling path calculating means for
3 calculating a final traveling path of said own vehicle based on
4 said first traveling path, said second traveling path and said
5 third traveling path.

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7 4. A vehicle surroundings monitoring apparatus,
8 comprising:

9 frontal information detecting means for detecting at
10 least solid object information and traveling road information
11 in front of an own vehicle;

12 preceding vehicle trace calculating means for
13 calculating a trace of a preceding vehicle from past data of said
14 preceding vehicle;

15 first own traveling path calculating means for
16 calculating a first traveling path of said own vehicle based on
17 said traveling road information;

18 second own traveling path calculating means for
19 calculating a second traveling path of said own vehicle based
20 on said trace of said preceding vehicle;

21 third own traveling path calculating means for
22 calculating a third traveling path of said own vehicle based on
23 traveling conditions of said own vehicle;

24 fourth own traveling path calculating means for
25 calculating a fourth traveling path of said own vehicle based

1 on said first own traveling path and said third own traveling
2 path; and

3 final own traveling path calculating means for
4 calculating a final traveling path of said own vehicle based on
5 said fourth traveling path and said second traveling path when
6 a preestablished condition is satisfied.

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8 5. The vehicle surroundings monitoring apparatus
9 according to claim 4, wherein said preestablished condition is
10 that the preceding vehicle exists and there is no possibility
11 of evacuation of said preceding vehicle and said own vehicle does
12 not make a turn.

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14 6. The vehicle surroundings monitoring apparatus
15 according to claim 2, wherein said traveling conditions include
16 at least a yaw rate of said own vehicle.

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18 7. The vehicle surroundings monitoring apparatus
19 according to claim 3, wherein said traveling conditions include
20 at least a yaw rate of said own vehicle.

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22 8. The vehicle surroundings monitoring apparatus
23 according to claim 4, wherein said traveling conditions include
24 at least a yaw rate of said own vehicle.

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1 9. The vehicle surroundings monitoring apparatus
2 according to claim 1, wherein said final own traveling path is
3 calculated from a previous own traveling path and a present own
4 traveling path.

5

6 10 The vehicle surroundings monitoring apparatus
7 according to claim 2, wherein said final own traveling path is
8 calculated from a previous own traveling path and a present own
9 traveling path.

10

11 11 The vehicle surroundings monitoring apparatus
12 according to claim 3, wherein said final own traveling path is
13 calculated from a previous own traveling path and a present own
14 traveling path.

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16 12 The vehicle surroundings monitoring apparatus
17 according to claim 4, wherein said final own traveling path is
18 calculated from a previous own traveling path and a present own
19 traveling path.

20

21 13. The vehicle surroundings monitoring apparatus
22 according to claim 1, wherein said final own traveling path is
23 calculated based on respectively weighted own traveling paths.

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25 14. The vehicle surroundings monitoring apparatus

1 according to claim 2, wherein said final own traveling path is
2 calculated based on respectively weighted own traveling paths.

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4 15. The vehicle surroundings monitoring apparatus
5 according to claim 3, wherein said final own traveling path is
6 calculated based on respectively weighted own traveling paths.

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8 16. The vehicle surroundings monitoring apparatus
9 according to claim 4, wherein said final own traveling path is
10 calculated based on respectively weighted own traveling paths.

11

12 17. The vehicle surroundings monitoring apparatus
13 according to claim 1, wherein when other own traveling paths are
14 calculated using said second own traveling path, said second own
15 traveling path is effectively used only in the vicinity of said
16 preceding vehicle.

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18 18. A traveling control system for controlling a traveling
19 of an own vehicle at least based on said final own traveling path
20 calculated by said vehicle surroundings monitoring apparatus
21 described in claims 1.

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23 19. A traveling control system for controlling a traveling
24 of an own vehicle at least based on said final own traveling path
25 calculated by said vehicle surroundings monitoring apparatus

1 described in claims 2.

2

3 20. A traveling control system for controlling a traveling
4 of an own vehicle at least based on said final own traveling path
5 calculated by said vehicle surroundings monitoring apparatus
6 described in claims 3.

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8 21. A traveling control system for controlling a traveling
9 of an own vehicle at least based on said final own traveling path
10 calculated by said vehicle surroundings monitoring apparatus
11 described in claims 4.

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